

What is claimed is:

1. An apparatus for the treatment of a waste gas containing combustible compounds comprising:

5 a catalytic oxidation reactor for the treatment of the waste gas;

a device for supplying the waste gas to the reactor;

plural preheating devices for heating the waste gas;

a heat-recovering device for recovering the amount of

10 heat of the treated gas emanating from said reactor;

a molecular oxygen-containing gas supplying device for supplying the molecular oxygen-containing gas to at least one arbitrary point between the waste gas inlet of a first waste gas pre-heater and the inlet of said reactor;

15 a treated gas emanating from said reactor as the heat source being supplied to at least one of the second to n'th waste gas pre-heaters and said heat-recovering device; and

20 a treated gas emanating from at least one of said second to n'th waste gas pre-heaters being mixed with the waste gas supplied to said reactor and a treated gas emanating from said heat-recovering device being supplied to said first waste gas pre-heater; or the treated gas emanating from at least one of said second to n'th waste gas pre-heaters and the treated gas emanating from said heat-recovering device being supplied  
25 to said first waste gas pre-heater as the heat source.

2. An apparatus according to claim 1, wherein said molecular oxygen-containing gas being supplied to the waste gas inlet of said first waste gas pre-heater.

30 3. An apparatus according to claim 1, wherein said molecular oxygen-containing gas being supplied to

at least one arbitrary point between the waste gas inlet of the second waste gas pre-heater and the inlet of said reactor.

4. An apparatus according to claim 1, wherein  
5 said molecular oxygen-containing gas being supplied to at least one arbitrary point of the waste gas inlet of the first waste gas pre-heater and between the waste gas inlet of the second waste gas pre-heater and the inlet of said reactor.

10 5. An apparatus according to claim 1, wherein part of the treated gas emanating from said heat-recovering device being supplied to said reactor.

15 6. An apparatus according to claim 1, which further comprises:

a temperature measuring means for the treated gas emanating from said first waste gas pre-heater; and

20 a molecular oxygen-containing gas flow controller to adjust the amount of the molecular oxygen-containing gas supplied to an arbitrary point between the waste gas outlet of said first waste gas pre-heater and the waste gas inlet of said reactor;

25 the temperature of the treated gas emanating from said first waste gas pre-heater being set at an arbitrary level by adjusting the amount of said molecular oxygen-containing gas.

30 7. An apparatus according to claim 1, which further comprises an oxygen gas concentration detector in the treated gas;

a molecular oxygen-containing gas supplying device

furnished with a driving part being driven at various revolutions; and

a discharging gas flow controller for said supplying device;

5 an oxygen gas concentration in the treated gas to be maintained being set at an arbitrary level by utilizing said discharging gas flow controller and controlling the revolutions of the driving part of said supplying device thereby adjusting the amount of the molecular  
10 oxygen-containing gas being discharged.

8. An apparatus for the treatment of a waste gas containing combustible compounds comprising:

15 a catalytic oxidation reactor for the treatment of the waste gas;

a device for supplying the waste gas to the reactor;  
plural preheating devices for heating the waste gas;  
a heat-recovering device for recovering the amount of heat of the treated gas emanating from said reactor;

20 a molecular oxygen-containing gas supplying device for supplying a molecular oxygen-containing gas to at least one arbitrary point between the waste gas inlet of a first waste gas pre-heater and the inlet of said reactor;

25 a part or the whole of the treated gas emanating from said reactor being supplied to at least one of the second to n'th waste gas pre-heaters;

a treated gas emanating from said second to n'th waste gas pre-heaters being supplied to said first waste gas pre-heater as the heat source; and

30 a treated gas emanating from said first waste gas pre-heater and said reactor being supplied to said heat-recovering device as the heat source provided inclusive

of the case wherein the amount of the treated gas from said reactor is zero.

9. An apparatus according to claim 8, which  
5 said molecular oxygen-containing gas being supplied to the waste gas inlet of a first waste gas pre-heater.

10. An apparatus according to claim 8, which  
said molecular oxygen-containing gas being supplied to  
10 at least one arbitrary point between the waste gas inlet of said second waste gas pre-heater and the inlet of said reactor.

11. An apparatus according to claim 8, which  
said molecular oxygen-containing gas being supplied to  
15 at least one arbitrary point of the waste gas inlet of said first waste gas pre-heater and between the waste gas inlet of said first waste gas pre-heater and the inlet of said reactor.

12. An apparatus according to claim 8, which further  
20 comprises an oxygen gas concentration detector in the treated gas;

a molecular oxygen-containing gas supplying device  
furnished with a driving part being driven at various  
25 revolutions; and

a discharging gas flow controller for said supplying  
means;

an oxygen gas concentration in the treated gas to be  
maintained being set at an arbitrary level by utilizing said  
30 discharging gas flow controller and controlling the revolutions of the driving part of said supplying device thereby adjusting the amount of the molecular

oxygen-containing gas being discharged.

13. A method for the treatment of a waste gas containing  
combustible compounds, comprising using the apparatus for  
5 the treatment of the waste gas set forth in claim 1.

14. A method for the treatment of a waste gas containing  
combustible compounds, comprising using the apparatus for  
the treatment of the waste gas set forth in claim 8.

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